AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of the claims in the present application.

1. (Currently amended)   A <u>device having</u> a self-scanned photodiode array wherein charge from individual pixels is switched from each pixel sequentially onto at least one output video line after a predetermined exposure time (t_0) comprising:

      at least one light source;

      at least one sample cell having means for receiving light from said at least one light source;

      a photo-diode array having pixels for collecting light transmitted through said at least one sample cell<u>, wherein the intensity of said light may vary across the spatial extent of the array</u>;

      means for reading said pixels;

      means for skipping the reading of selected pixels for one or more additional exposure times <u>t_0</u> allowing said selected pixels to be exposed for specified integer multiples (M) of said predetermined exposure time<u>t_0</u>, thereby allowing said selected pixels receiving less light to accumulate additional charge before being read <u>out</u> and thereby reducing <u>the</u> number of read cycles and improving <u>the</u> signal-to-noise ratio.

2. (Original)   The self-scanned photodiode array of claim 1 wherein different pixels are exposed for the same or different integer multiples (M) of said predetermined exposure time.

3. (Currently amended)   The self-scanned photodiode array of claim 1 in which said predetermined exposure time $\underline{t_0}$ does not exceed saturation of the pixel or pixels accumulating charge at a highest rate within a predetermined range of pixels.

4. (Original) The self-scanned photodiode array of claim 1 wherein specified integer multiples M are chosen such that each pixel signal, within a predetermined range of pixels approaches but does not exceed saturation.

5. (Original) The self-scanned photodiode array of claim 1 wherein said exposure time of individual pixels, Mt_0, does not cause saturation of pixels from which charge is measured.

6. (Currently amended)   The self-scanned photodiode array of claim 1 wherein said exposure time of each pixel, is an integer multiple M of said predetermined exposure time $\underline{t_0}$, ~~which does not include the integer 1~~ wherein the lowest value of M is greater than one.

7. (Currently amended)   The self-scanned photodiode array of claim 1 wherein [[said]] a sample time is defined as a time taken for one or more complete measurements of the full or selected portion of the photodiode array, said individual pixel exposure times Mt_0 being submultiples of said sample time.

8. (Original) The self-scanned photodiode array of claim 1 wherein said predetermined exposure time t_0 is established when said photo-diode array receives said light according to a reference condition.

9. (Original) The self-scanned photodiode array of claim 3 wherein the predetermined range of pixels includes the full array.

10. (Original) The self-scanned photodiode array of claim 4 wherein the predetermined range of pixels includes the full array.

11. (Original) The self-scanned photodiode array of claim 1 wherein the value recorded when a pixel read is skipped is set to zero to avoid the addition of unnecessary read noise.

12. (Currently amended)   A method of improving signal to noise ratio of measurements made using a self-scanned photodiode array to detect light in the ultraviolet, visible and infrared portions of a light spectrum comprising the steps of:

exposing pixels of said photodiode array to light received from a reference condition and measuring the spectrum of a short exposure time causing no saturation of said pixels;

measuring a dark spectrum of said pixels with shutter closed using said short exposure time;

calculating a dark corrected reference signal from each pixel;

calculating an exposure time for each pixel such that its accumulated charge would reach a predetermined level, close to but below saturation;

establishing a predetermined exposure time t_0, short enough that no pixel [[is]] in a specified range of interest will saturate;

assigning integers M such that individual pixels are exposed for integer multiples of the predetermined exposure time Mt_0, such that after time Mt_0 said individual pixels have accumulated charge close to but not exceeding saturation;

re-measuring dark spectrum with shutter closed using exposure pattern determined by integers;

re-measuring reference spectrum using exposure pattern determined by integers, thereby creating a dark-corrected reference spectrum;

Measuring sample spectra using the same exposure pattern determined by integers and creating dark corrected sample spectra;

combining reference and sample spectra to determine absorption characteristics of sample and thereby identify and quantitate same with improved signal-to-noise ratio.

13. (New)   A self-scanned photodiode array wherein charge from individual pixels is switched from each pixel sequentially onto at least one output video line after a predetermined exposure time (t_0) comprising:

an array of photodiode pixels for collecting light, wherein the intensity of said light may vary across the spatial extent of the array;

means for reading said pixels;

means for skipping the reading of selected pixels for one or more additional exposure times t_0 allowing said selected pixels to be exposed for specified integer multiples (M) of said predetermined exposure time t_0, thereby allowing said selected pixels receiving less light to accumulate additional charge before being read out and thereby reducing the number of read cycles and improving the signal-to-noise ratio of the measured light.